Chapter 5: Environmental Consequences

As directed by the National Environmental Policy Act of 1969 (NEPA), this chapter addresses the potential impacts of the US 31 Improvement Project alternatives on the social, economic, and natural environmental setting of the project area. These include both direct, predictable impacts and those that are more indeterminate and not as easy to recognize. The latter are grouped into the general categories of indirect and cumulative impacts.

Direct impacts typically include those that involve clearly observable, physical alteration of the land or water bodies as a result of construction activities within the proposed right-of-way. Impacts such as these may be permanent or temporary and positive or negative in nature. For example, displacing residences or businesses that are in the path of a proposed road alignment is a permanent impact in much the same way as changing a stream course or draining and filling a wetland is also permanent.

Indirect impacts are those that occur as a result of a project action but are removed from the immediate right-of-way. The Federal Highway Administration (FHWA) defines indirect impacts as those that are "caused by an action and are later in time or farther removed in distance, but are still reasonably foreseeable." Generally these impacts are induced by the initial action. They comprise a wide variety of indirect effects such as changes in land use, economic development, and population density. Cumulative effects are impacts that result from the "incremental consequences of an action when added to other past and reasonably future actions…[They are]… less defined than indirect impacts…[and]…may be undetectable when viewed in the individual context of direct and even indirect impacts, but nonetheless can add to other disturbances and eventually lead to measurable environmental change" (FHWA).

The potential direct impacts that would be associated with the build alternatives are illustrated in Appendix A, Sheets 1 through 20. These impacts are also summarized in Table 5.1-1. Indirect and cumulative impacts are presented in Section 5.20.

5.1 Traffic and Transportation

This section examines the traffic impacts of the No-Action Alternative, Transportation Management Alternative, Alternatives F1 through F6, and Alternatives G1 through G6.

5.1.1 No-Action Alternative

The No-Action Alternative assumes that all of the projects in the current Indianapolis Metropolitan Planning Organization (MPO) Year 2025 Regional Transportation Plan would be implemented with the exception of the US 31 Improvement Project. Improvements planned in or near the project area include:

Table 5.1-1 Potential Impacts of Alternatives

Category		Units	Alternative												
			No-Action	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6
Landuse:	agricultural	acres	0	102.8	102.8	102.8	102.3	102.3	102.3	276.8	276.8	276.8	276.3	276.3	276.3
	commercial	acres	0	86.2	85.3	84.5	85.9	85.0	84.1	66.0	65.0	64.0	65.0	64.0	64.0
	industrial	acres	0	18.1	18.1	18.1	18.1	18.1	18.1	1.0	1.0	1.0	1.0	1.0	1.0
	institutional	acres	0	21.7	21.7	21.7	21.7	21.7	21.7	20.4	20.4	20.4	20.4	20.4	20.4
	mixed urban	acres	0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
	residential	acres	0	26.8	27.3	29.2	26.8	27.3	29.2	45.5	45.9	47.8	45.5	45.9	47.8
	forest land	acres	0	32.4	35.3	39.1	31.8	34.7	38.5	84.6	87.5	91.4	84.0	86.9	90.7
	herbaceous rangeland	acres	0	2.6	2.6	2.6	2.7	2.7	2.7	9.2	9.2	9.2	9.3	9.3	9.3
	shrub/brush rangeland	acres	0	8.9	9.2	9.4	10.3	10.6	10.8	10.9	11.1	11.4	12.3	12.5	12.8
	TOTAL	acres	0	**299.7**	**302.4**	**307.6**	**299.7**	**302.4**	**307.6**	**514.4**	**517.0**	**522.0**	**513.7**	**516.3**	**522.3**
Relocations:	single residence	number	0	48	48	50	48	48	50	29	29	31	29	29	31
	multiple residence	number	0	1	1	2	1	1	2	1	1	2	1	1	2
	TOTAL	number	0	**49**	**49**	**52**	**49**	**49**	**52**	**30**	**30**	**33**	**30**	**30**	**33**
	retail	number	0	26	25	25	26	25	25	9	8	8	9	8	8
	office	number	0	12	12	12	12	12	12	4	4	4	4	4	4
	library, hospitals, schools	number	0	0	0	0	0	0	0	0	0	0	0	0	0
	industrial	number	0	5	5	5	5	5	5	1	1	1	1	1	1
	TOTAL	number	0	**43**	**42**	**42**	**43**	**42**	**42**	**14**	**13**	**13**	**14**	**13**	**13**
	Churches	number	0	2	2	2	2	2	2	2	2	2	2	2	2
School Properties:		number	0	1	1	1	1	1	1	0	0	0	0	0	0
		acres	0	0.9	0.9	0.9	0.9	0.9	0.9	0	0	0	0	0	0
Cemeteries:		number	0	0	0	0	0	0	0	0	0	0	0	0	0
Section 4(f) Property		number	0	0	0	0	0	0	0	0	0	0	0	0	0
(Public Parks & Recreational Areas):		acres	0	0	0	0	0	0	0	0	0	0	0	0	0
Emergency Facilities:	Fire/Police	number	0	0	0	0	0	0	0	0	0	0	0	0	0
Hazardous Materials Sites:		number	0	12	12	12	12	12	12	6	6	6	6	6	6
Noise Receptors:		number	71	76	76	76	76	76	76	55	55	55	55	55	55
Major Utilities:		number	0	14	14	14	14	14	14	14	14	14	14	14	14
Wellhead Protection Zones:		number	0	4	4	4	4	4	4	1	1	1	1	1	1
Wetlands:	forested (PFO1)	acres	0	0.27	0.57	2.67	0.27	0.57	2.67	5.13	5.43	7.53	5.13	5.43	7.53
	scrub-shrub (PSS1)	acres	0	0.05	0.05	0.05	0.05	0.05	0.05	0.34	0.34	0.34	0.34	0.34	0.34
	emergent (PEMC)	acres	0	0.60	0.60	0.60	0.60	0.60	0.60	1.95	1.95	1.95	1.95	1.95	1.95
	TOTAL	acres	0	**0.92**	**1.22**	**3.32**	**0.92**	**1.22**	**3.32**	**7.42**	**7.72**	**9.82**	**7.42**	**7.72**	**9.82**
Open Water (ponds, lakes, etc.):		acres	0	4	5	5	3	4	4	3	3	3	2	2	2
Streams:		crossings	0	11	11	11	11	11	11	15	15	15	15	15	15
		linear feet	0	3165	3165	3258	3165	3165	3258	5272	5272	5365	5272	5272	5365
Floodplains:	Floodways	number	0	7	7	7	7	7	7	7	7	7	7	7	7
		acres	0	10.3	10.3	10.3	10.3	10.3	10.3	17.9	17.9	17.9	17.9	17.9	17.9
	100-yr floodplain	number	0	14	14	14	14	14	14	12	12	12	12	12	12
		acres	0	35.0	35.7	35.7	35.0	35.7	35.7	45.5	46.2	46.2	45.5	46.2	46.2
Soils:	prime farmland	acres	0	95	97	98	95	97	98	277	279	280	277	279	280
Archaeological:	archaeological sites	number	0	7	8	8	7	8	8	4	5	5	4	5	5
		acres	0	1.1	1.5	1.5	1.1	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
	high probability	acres	0	42	44	44	42	44	44	76	77	77	76	77	77
Historic:	Section 106*	number	0	2	2	2	2	2	2	1	1	1	1	1	1
Planned Future Development:		acres	0	14	20	32	17	23	23	99	105	117	101	107	119
Costs:															
Construction Cost		$ million	0	316	317	310	316	317	310	349	350	343	349	350	343
Right-Of-Way Cost		$ million	0	118	116	116	118	116	116	98	96	96	97	95	95
Total Cost		$ million	0	**434**	**433**	**426**	**434**	**433**	**426**	**447**	**446**	**439**	**446**	**445**	**438**

* - Adverse affects to potentially eligible sites

- Northbound connector from SR 431(Keystone Avenue) to 146th Street
- Widening SR 431 from four lanes to six lanes from 96th Street to US 31
- Northeast Corridor (NEC) Connections project
    - Adding travel lanes to I-465 north leg from US 31 east to I-70
    - Adding travel lanes to I-69 from I-465 north to SR 238
- Adding travel lanes to I-465 (north leg) from US 421 to west of US 31
- Construction of a new four-lane local roadway, Illinois Street, from 103rd Street to 136th Street
- Widening 116th Street from two lanes to four lanes from Rangeline Road east to Gray Road
- Widening 126th Street from two lanes to four lanes from Pennsylvania Street east to Adams Street
- Widening Old Meridian Street from two lanes to four lanes from Pennsylvania Street east to Guilford Boulevard
- The widening from two lanes to five lanes of SR 32 from 1.6 miles west of US 31 (Spring Mill Road) to US 31
- A placeholder for increased capacity along SR 32 from US 31 to 2.6 miles east of US 31 (Moontown Road)

The aforementioned NEC Project focuses on major highway and transit improvements that would have the most benefit to the Indianapolis regional transportation system. The NEC study area, as identified by the Indianapolis MPO, includes the main travel corridors between downtown Indianapolis and Carmel, Fishers, and Noblesville. This study area also includes the residential and commercial areas of northeastern and central Marion County. The entire project area is approximately 23 miles in length and extends from the I-70/I-465 split on the northeast side of Indianapolis to an area north of SR 32 near Noblesville. The western portion of the project area extends west of US 31 (Meridian Street) to an area north of 146th Street between Carmel and Westfield. Although the project does not propose the upgrade or alteration of the existing US 31 corridor through the City of Carmel, it focuses on improving the flow of traffic in northeastern Marion and eastern Hamilton Counties. Fourteen alternatives were analyzed in terms of general costs and impacts. Among the alternatives analyzed were a series of express bus routes. Among the analyzed express routes was the 'Carmel Express' that would run from Village Park Plaza near the intersection of US 31 and SR 431 and continue to Downtown Indianapolis via Rangeline Road, 116th Street, SR431/Keystone Avenue, Fall Creek Parkway, Capitol Street, and Illinois Street.

INDOT prepared an Environmental Assessment (EA) in November 2001 for SR 431 from 96th Street to approximately 1,000 feet north of 136th Street. The SR 431 Improvement Project consists of widening SR 431 from four lanes to six lanes within the existing median. In addition to this project, Hamilton County is constructing a northbound connector from SR 431 to 146th Street. The proposed US 31 Improvement Project involves three potential interchange options at 146th Street that would tie into SR 431. The FHWA issued a Finding of No Significant Impacts (FONSI) for the SR 431 EA on May 28, 2002.

A proposed transportation improvement is in one of two categories: programmed or placeholder. If a proposed improvement is programmed, the project has received sufficient study and a preferred alternative has been selected. Placeholders are categories for proposed improvements

that offer a solution to the identified transportation problem but it is not clear if the proposed improvement is the "best" improvement. These projects are usually in the early stages of the planning process and additional study is required to determine the preferred improvement.

In addition to major planned projects, the Indianapolis MPO Year 2025 Regional Transportation Plan also includes a number of Transportation Demand Management (TDM) and Transportation System Management (TSM) programs and policies intended to reduce travel demand and increase the efficiency of the transportation system. Since no action is proposed on the existing transportation system along US 31, traffic volumes would continue to increase. This would result in additional congestion on US 31 and its cross streets. There would also be no modifications to the access points unless existing unsignalized intersections warrant signals due to future growth.

Traffic volumes on US 31 are projected to increase by 20 to 40 percent over the next 25 years (Note: Future traffic volumes are generated using the Indianapolis MPO computer forecasting model). As a result, delay and congestion found in the corridor would exceed that existing today. By 2025, 12 of the 15 signalized intersections are projected to have LOS E or F during the morning peak and eight of 15 are projected to reach this level during the evening peak. Eight of these intersections are projected to have LOS F during the morning peak. Between 96th Street and 136th Street, all of the signalized intersections are expected to reach LOS F during at least a portion of the day. Table 5.1-2 compares the levels of service between the years 2000 and 2025 for each signalized intersection.

Table 5.1-2
No-Action Alternative
US 31 Intersection Levels of Service

Intersection	Existing Level of Service (2000)		Projected Level of Service (2025) No Action Alternative	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
96th Street	**E**	**E**	**E**	**F**
I-465 Westbound Ramps	D	C	**F**	C
I-465 Eastbound Ramps	**E**	C	**F**	C
103rd Street	**E**	**E**	**E**	**F**
106th Street	**E**	D	**F**	**F**
116th Street	**F**	**F**	**F**	**F**
Carmel Drive	**F**	**E**	**F**	**F**
136th Street	D	D	**F**	**E**
Rangeline Road	B	D	B	D
Greyhound Pass	D	D	**E**	D
151st Street	**F**	D	**E**	C
161st Street	D	D	**F**	C
SR 32	D	D	**F**	**F**
181st Street	A	B	C	D
SR 38	C	D	D	**E**

E, F = Substandard levels of service

Level of service provides a measure of congestion on roadways. LOS ranges from A to F, with LOS A indicating the least traffic congestion and LOS F indicating the most traffic congestion (Figure 5.1-1). Intersections control capacity on signalized arterials and are analyzed to determine levels of service along the arterial. LOS is based on the average stopped delay per

vehicle at the intersection. INDOT standards state that for a multi-lane urban arterial, LOS C is desirable while the minimum LOS is D.

A Transportation Management (TM) alternative was examined to test the effect of a combination of TDM, TSM, and Mass Transit alternatives. These alternatives are usually designed to accommodate home-based work trips; therefore, travel patterns into and out of the study area were examined to estimate the effectiveness of such a strategy. Case studies of similar programs were also studied to aid in the estimation of the effectiveness of this alternative.

5.1.2 Alternatives F1 through F6

Traffic Capacity Analysis

Traffic capacity analysis for the morning and evening peak hours was completed for each mainline segment of the proposed freeway and is reported as LOS. Levels of service along the proposed freeway range from LOS A to C with lower, but still acceptable, service levels near the 146th Street, 116th Street and I-465 interchanges. Results of this analysis can be found in Table 5.1-3. These results meet INDOT's standards for an urban freeway design class.

Traffic capacity analysis was also completed at the intersections of the ramp junctions and cross streets for the morning and evening peak hours. Intersections were designed to meet INDOT's standards at signalized intersections. Levels of service range from A to D at all the intersections except the 146th Street interchange Lateral Access Option, which falls below LOS D for the design year, 2025. Results of the analysis can be found in Table 5.1-4.

The intersections created from the ramp junctions and cross streets would be designed to meet the INDOT standard of LOS D or better, subject to design-year traffic demand. A majority of the off- and on-ramps would be one-lane, except for the I-465 to US 31 northbound on-ramp, the US 31 southbound to I-465 off-ramp, the US 31 northbound to I-465 eastbound off-ramp, and the northbound off-ramp to 116th Street.

Access

Because these alternatives propose that the facility be upgraded to a limited access freeway, a number of streets and private driveways would lose direct access to US 31. However, dependent on costs and impacts, alternative routes would be provided to selected cross streets or private businesses and residences that lose direct access. This access may be an existing street or new roadway that would connect to a street with an interchange at US 31.

An alternative route would be provided for the private residences and businesses with existing access to US 31 if the property is not taken and no other route exists. The alternate route would access a cross street with an interchange at US 31, dependent on cost and impacts.

The following streets would lose direct access to US 31 (i.e., no at-grade intersection or interchange would be provided): 103rd Street (closed); 111th Street (closed); Old Meridian Street (closed); 126th Street or 131st Street (underpass/overpass); Circle Drive (closed); Rangeline Road (closed); Greyhound Pass (closed); 151st Street (closed); Westfield Boulevard (closed); 156th Street (overpass); Buena Vista (closed); Park Street (closed); 169th Street (closed); North Glen Drive (closed); David Brown Drive (closed); 181st Street overpass); Blackburn Avenue (closed); Union Street (closed); 196th Street (closed); 202nd Street (closed); and, 203rd Street.

Table 5.1-3
Alternatives F1 Through F6
Proposed Mainline Segment Levels of Service – 2025

Location	AM Peak Hour				PM Peak Hour			
	Northbound		Southbound		Northbound		Southbound	
	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
I-465 Interchange								
I-465 to 106th Street	4500	B	3425	B	3575	B	4750	C
106th Street to 116th Street	5050	B	4125	B	4200	B	5100	C
116th Street to 126th/131st Street	2925	B	3600	B	3875	C	3250	B
126th/131st Street to 136th Street	1925	B	3325	C	3725	C	2500	B
146th Street Interchange – Diamond Alternative								
136th Street to SR 431	1650	A	3150	C	3900	C	2800	B
SR 431 to 146th Street	1650	A	1925	B	3200	B	1750	A
146th Street to 161st Street	2275	A	3525	B	4000	B	3400	B
146th Street Interchange – Folded Diamond Alternative								
136th Street to SR 431	1650	A	3150	C	3900	C	2800	B
SR 431 to 146th Street	1650	A	1925	A	3200	B	1750	A
146th Street to 161st Street	2275	B	3525	B	4000	C	3400	B
146th Street Interchange – Lateral Access Alternative								
136th Street to SR 431	1650	A	3150	B	3900	C	2800	B
SR 431 to 146th Street	1650	A	1925	B	3200	B	1750	A
146th Street to 161st Street	2275	A	3525	B	4000	B	3400	B
161st Street to SR 32	2275	B	3300	C	3875	C	3325	C
SR 32 to 191st Street	2075	B	3075	C	3400	C	3075	C
191st Street to SR 38	1700	A	2675	B	3100	C	2700	B

Note: I-465 interchange and 146th Street interchange results from simulation analysis (CORSIM). All other results from capacity analysis (Highway Capacity Software)

Table 5.1-4
Alternatives F1 Through F6
Proposed Ramp Intersection Levels of Service – 2025

Location	AM Peak		PM Peak	
	South Ramps	North Ramps	South Ramps	North Ramps
I-465 Westbound to US 31 Southbound	B	-	B	-
106th Street	B	B	B	B
116th Street	B	C	C	C
126th Street	B	B	B	B
131st Street	B	B	B	B
136th Street	C	B	B	B
146th Street – Diamond*	C	C	B	B
146th Street – Folded Diamond*	D	D	D	D
146th Street – Lateral Access*	D	**E**	**E**	D
161st Street	B	B	B	B
SR 32	B	B	B	B
191st Street	A	B	A	B
SR 38	A	A	A	B

* Results for 106th Street, 116th Street and 146th Street interchanges from simulation analysis (CORSIM). All other results from interchange analysis (SYNCHRO)

E = Substandard level of service

I-465 Interchange Simulation

Proposed modifications at the US 31 and I-465 interchange and the US 31, SR 431 and 146th Street interchange were modeled using CORSIM, a microscopic simulation model designed to simulate traffic flow on freeways and surface streets. It provides a representation of individual vehicles and their interaction with their physical environment and other vehicles. The main benefit of this model compared to other capacity analysis methods is that it analyzes the freeway and surface street system as a whole, rather than isolating each segment. This is especially important where a traffic backup at one location, such as a heavily congested intersection, can spill over and cause traffic congestion on other freeway or street segments.

These two interchanges were analyzed with CORSIM due to their complex interchange types and their interaction with local streets. The diamond interchanges (predominantly tight diamond urban, TDUI) beyond the simulation study boundaries are less complex and were analyzed using capacity analysis software.

The limits for the I-465 and US 31 interchange simulation were the 96th Street intersection to the south and the 116th Street interchange to the north. Peak-hour traffic volumes were projected to 2025 for the proposed freeway and include 96th Street, 106th Street and 116th Street as well as US 31.

The proposed US 31 freeway in the vicinity of I-465 is projected to operate at acceptable levels of service during the AM peak hour. The proposed US 31 freeway is projected to operate at LOS B in both directions (Table 5.1-3). The freeway-to-freeway ramps (I-465 to US 31 and US 31 to I-465) in the interchange are projected to operate at LOS A to D (Table 5.1-5). The intersections at the 106th Street and 116th Street interchanges would operate at LOS B and C (Table 5.1-3). The I-465 westbound ramp intersection would operate at LOS B while the 96th Street intersection would operate at LOS D.

Table 5.1-5
Proposed I-465 Ramp Levels of Service – 2025

Location	AM Peak – LOS Range	PM Peak – LOS Range
I-465 Eastbound to US 31 Northbound	B – D	A – C
I-465 Eastbound to US 31 Southbound	C – D	B – C
I-465 Westbound to US 31 Northbound	A – C	A – B
I-465 Westbound to US 31 Southbound	A – B	A – B
US 31 Northbound to I-465 Eastbound	A – C	C – D
US 31 Northbound to I-465 Westbound	B – C	C – D
US 31 Southbound to I-465 Eastbound	B – C	C – D
US 31 Southbound to I-465 Westbound	B – C	C – D

Note: The projected levels of service are for the freeway-to-freeway ramps within the I-465 interchange. These differ from the ramps at diamond interchanges, where the intersection dictates the level of service on the ramp.

For the PM peak hour, the US 31 mainline freeway is projected to operate at LOS B to C and the freeway-to-freeway ramps are projected to operate at LOS A to D. The intersections at the 106th Street and 116th Street interchanges would operate at LOS B to C. The I-465 westbound ramp intersection would operate at LOS B. A level of service D is projected to occur at 96th Street.

146th Street/SR 431 Interchange Simulation

Three interchange alternatives were developed and evaluated at the US 31/SR 431/146th Street area: a tight diamond (TDUI), a folded diamond, and the lateral access. Simulation of all three alternatives included the proposed US 31 mainline from northeast of the 136th Street interchange to south of the 161st Street interchange, SR 431 from south of the 146th Street off-ramp to US 31 and 146th Street. The diamond and lateral access simulations include the proposed Rangeline Road extension and its intersection with 146th Street. All alternatives include the connector from SR 431 northbound to 146th Street. The 146th Street interchange options eliminate direct access to US 31 from Greyhound Pass. The existing traffic demand at the US 31 and Greyhound Pass intersection would be shifted to 146th Street with the construction of a 146th Street interchange on US 31.

Tight Diamond Urban Interchange Alternative

The diamond configuration analysis evaluated the proposed US 31 freeway and the proposed signals from the ramps along 146th Street along with the Rangeline Road extension and the SR 431 northbound connector to 146th Street. The Rangeline Road extension and the SR 431 connector are both Hamilton County projects. The proposed design for Rangeline Road was used for this analysis. During the AM peak hour, the US 31 and SR 431 mainline and ramps are projected to operate from LOS A to C. Intersections were evaluated along 146th Street and Rangeline Road, US 31 southbound ramps, US 31 northbound ramps and the northbound SR 431 ramp. These intersections were coordinated to improve traffic flow. Intersections were also evaluated along Rangeline Road at the proposed north and south parking lots (associated with the proposed Clay Terrace Development). All six intersections would operate at LOS C or better. Results of the PM peak hour exhibit similar results. The US 31 and SR 431 mainline and ramps are projected to operate at LOS A to C. The intersections along 146th Street would operate at LOS B and C while results along Rangeline Road would yield LOS A and B.

Folded Diamond Interchange Alternative

The folded diamond configuration does not include the Rangeline Road extension. The proposed US 31 southbound off-ramp intersects with 146th Street at the proposed Rangeline Road intersection. Due to the design, however, the southbound ramps would eliminate the option of extending Rangeline Road to 146th Street. The US 31 and SR 431 mainline is projected to operate at desirable levels of service during the AM peak hour as would the ramps accessing 146th Street. The two intersections along 146th Street and the US 31 ramps would operate at LOS D. The PM peak hour results are similar to the morning, with the US 31 and SR 431 mainline projected to operate at LOS C or better. The ramp intersections would also operate at LOS D.

Lateral Access Interchange Alternative

The lateral access configuration consists of the southbound ramps merging with the proposed extension of Rangeline Road. The proposed design for Rangeline Road was used for this analysis. Since the proposed peak hour volumes of the US 31 southbound lanes travel on Rangeline Road, the volumes exceed the capacity of a multi-lane roundabout. Therefore, signalized intersections were modeled in their place. The proposed on-street parking was also not modeled due to the proposed volumes due to the US 31 southbound ramps.

During the AM peak hour, the US 31 freeway mainline and ramps are projected to operate at levels of service ranging from LOS A to E. Using the proposed intersection layouts, three of the

four intersections analyzed would operate at LOS E or F. The intersection of 146th Street and Rangeline Road is projected to operate at LOS F with an average vehicle delay of nearly 142 seconds. Due to this delay, less than 1,000 of the proposed 1,425 vehicles (65% of the demand) are able to make the left turn. At the intersection of Rangeline Road and the US 31 southbound ramp, only 68% (1,229 vehicles of the 1,800 proposed) are able to make the left turn. Because of this congestion, only 75% of the projected volume is able to access US 31 southbound. Due to these two congestion points, the entire surface street system experiences high delays and the projected volumes exceed the capacity of the roadway.

The PM peak hour experiences the same conditions. The freeway mainline and ramps are projected to operate at LOS A to E. Three of the four intersections examined would operate at LOS E or F, causing delays throughout the surface street system. The intersection of 146th Street and Rangeline Road operates at LOS F, with the eastbound left turn experiencing the highest delay (194 seconds per vehicle). Only 85% of the vehicles projected to make the left turn are able to execute the movement. The intersection of Rangeline Road and the US 31 southbound ramps also experiences high delays, with many of the individual movements operating at LOS F. These two intersections cause congestion and blockages throughout the surface street system.

If several improvements are made to the Rangeline Road extension, projected operations along the surface street system can improve. With the addition of a northbound left and right turn lanes at 146th Street and Rangeline Road and a southbound left turn lane at Rangeline Road and the US 31 southbound ramps, projected operations improve to meet INDOT standards. However, as with the original design, proposed on-street parking and the roundabouts (Clay Terrace) were not examined as part of this study due to the high volumes along Rangeline Road accessing the US 31 southbound ramps.

If these improvements are made to the proposed Rangeline Road extension, projected operations during the AM peak hour along the freeway mainline are at level of service A to C. With the additional capacity at Rangeline Road and 146th Street, 1,425 projected vehicles are able to make the westbound left turn with a decrease in delay of 77%. The four intersections analyzed are projected to operate within INDOT standards, at LOS B to D. The future demands of the four intersections are met. The southbound left turn at Rangeline Road and the US 31 southbound ramps would improve from LOS F to LOS C with a 60% decrease in delay. Many of the other individual movements also improve dramatically.

During the PM peak hour, operations along the freeway mainline and ramps are projected to range from LOS A to C. The projected operations at the four intersections range from LOS B to C. All future demand is met with the additional improvements to Rangeline Road. The average westbound left turn delay at 146th Street and Rangeline Road is projected to decrease by 77%, improving from LOS F to LOS D. At Rangeline Road and the US 31 southbound ramps, average southbound left turn delay is projected to decrease by 60%, from LOS E to LOS C. Many of the other individual movements also improve dramatically.

The tight diamond urban interchange alternative meets all of the INDOT level of service standards for the freeway and surface street systems. All levels of service are projected to be LOS D or better. The folded diamond alternative would operate at acceptable levels of service; however, the southbound ramps eliminate the option of extending Rangeline Road to 146th

Street. This would eliminate access to the proposed commercial development in that area in addition to directly impacting the proposed site plans (Clay Terrace). Using the design for Rangeline Road, the lateral access configuration would result in a level of service F at Rangeline Road and 146th Street for both the AM and PM peak hours. Several other intersections also operate at LOS E during the peak hours. The addition of the US 31 ramp volumes onto Rangeline Road would require the conversion of the proposed roundabouts to signalized intersections and the provision of additional turn lanes. In addition, the proposed on-street parking would have to be moved to the parking lots due to the additional traffic. With this alternative, Rangeline Road would function as a high-volume ramp, which would be incompatible with the proposed adjacent land uses.

5.1.3 Alternatives G1 through G6

Traffic Capacity Analysis
Traffic capacity analysis for the morning and evening peak hours was completed for each mainline segment of the proposed freeway and is reported as a level of service (Table 5.1-6).

Levels of service along the proposed freeway range from LOS A to C with lower, but still acceptable, service levels near the I-465, 116th Street and 146th Street interchanges. High volumes entering and exiting the system contribute to the lower LOS. These results meet INDOT's standards for an urban freeway design class.

Traffic capacity analysis was also completed at the intersections of the ramp junctions and cross streets for the morning and evening peak hours. Intersections were designed to meet INDOT's standards at signalized intersections. Levels of service range from A to D at all of the intersections, except for the Lateral Access interchange at 146th Street. Results of the analysis can be found in Table 5.1-7.

The intersections created from the ramp junctions and cross streets would all be designed to meet the INDOT standard of LOS D or better. All off- and on-ramps would be one lane at the proposed interchanges, except for the dual lane ramps at I-465 to US 31 northbound on-ramp, the US 31 southbound to I-465 off-ramp, the US 31 northbound to I-465 eastbound off-ramp and the northbound off-ramp to 116th Street.

Access
Because these alternatives propose that the facility be upgraded to a limited access freeway, a number of streets and private driveways would lose direct access to US 31. However, dependent on costs and impacts, alternative routes would be provided to cross streets or private businesses and residences that lose direct access. This access may be an existing street or new roadway that would connect to a street with an interchange at US 31.

Streets south of 161st Street that would lose access to US 31 (i.e., no at-grade intersection or interchange will be provided) are the same as those for the F Alternatives. Alternatives G1-G6 require a new alignment to the east of Westfield, so there are no impacts to access on existing US 31 north of 161st Street. The following streets would be closed or cross the alignment via an overpass or underpass: Westfield Boulevard (closed); Oak Road (closed); Carey Road (closed); Grassy Branch Road (relocated/overpass); 196th Street (closed); 203rd Street (closed); and, 216th Street (closed).

Table 5.1-6
Alternatives G1 Through G6
Proposed Mainline Segment Levels of Service – 2025

Location	AM Peak Hour				PM Peak Hour			
	Northbound		Southbound		Northbound		Southbound	
	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
I-465 Interchange								
I-465 to 106th Street	4500	B	3425	B	3575	B	4750	C
106th Street to 116th Street	5050	B	4125	B	4200	B	5100	C
116th Street to 126th/131st Street	2925	B	3600	B	3875	C	3250	B
126th/131st Street to 136th Street	1925	B	3325	C	3725	C	2500	B
146th Street Interchange – Diamond Alternative								
136th Street to SR 431	1650	A	3150	C	3900	C	2800	B
SR 431 to 146th Street	1650	A	1925	B	3200	B	1750	A
146th Street to 161st Street	2275	A	3525	B	4000	B	3400	B
146th Street Interchange – Folded Diamond Alternative								
136th Street to SR 431	1650	A	3150	C	3900	C	2800	B
SR 431 to 146th Street	1650	A	1925	A	3200	B	1750	A
146th Street to 161st Street	2275	B	3525	B	4000	C	3400	B
146th Street Interchange – Lateral Access Alternative								
136th Street to SR 431	1650	A	3150	B	3900	C	2800	B
SR 431 to 146th Street	1650	A	1925	B	3200	B	1750	A
146th Street to 161st Street	2275	A	3525	B	4000	B	3400	B
161st Street to SR 32	1600	A	2350	B	2825	B	2375	B
SR 32 to 191st Street	1450	A	2175	B	2450	B	2275	B
191st Street to SR 38	1250	A	1975	B	2300	B	2025	B

Note: I-465 interchange and 146th Street interchange results from simulation analysis (CORSIM). All other results from capacity analysis (Highway Capacity Software)

Table 5.1-7
Proposed Ramp Intersection Levels of Service – 2025

Location	AM Peak		PM Peak	
	South Ramps	North Ramps	South Ramps	North Ramps
I-465 Westbound to US 31 Southbound	B	-	B	-
106th Street	B	B	B	B
116th Street	B	C	C	C
126th Street	B	B	B	B
131st Street	B	B	B	B
136th Street	C	B	B	B
146th Street – Diamond*	C	C	B	B
146th Street – Folded Diamond*	D	D	D	D
146th Street – Lateral Access*	D	**E**	**E**	D
161st Street	A	A	A	B
SR 32	A	B	A	B
191st Street	A	A	A	A
SR 38	A	A	A	B

* Results for 106th Street, 116th Street and 146th Street interchanges from simulation analyses (CORSIM). All others from interchange analyses (SYNCHRO)

E = Substandard level of service

SR 32 Traffic Analysis

When compared to Alternatives F1 through F6, the G Alternatives are projecting a reduction in traffic along SR 32 through the Town of Westfield. Access to US 31 would be provided to the east of Westfield with the G Alternatives while access is still provided to the west with existing US 31. Traffic east of Westfield traveling westbound on SR 32 to US 31 would utilize the G Alternatives to travel north or south; therefore, reducing the number of trips through the Town of Westfield. Table 5.1-8 displays projected traffic counts along SR 32 east and west of Union Street. It is estimated that the G Alternatives would result in a reduction of 860 and 1,200 vehicles per hour west of Union Street during the AM and PM peak hours, respectively. The area east of Union Street would experience a reduction of 650 vehicles in the AM peak hour and 800 vehicles in the PM peak hour. Daily volumes also decrease with these alternatives.

Table 5.1-8
SR 32 Projected Traffic Counts 2025

Alternative	SR 32 West of Union Street			SR 32 East of Union Street		
	AM Peak Hour	PM Peak Hour	ADT	AM Peak Hour	PM Peak Hour	ADT
Alternative F	2625	3125	28800	2605	2964	27800
Alternative G	1763	1939	18500	1958	2173	20700

5.2 Pedestrian/Bicycle Access

As mentioned in Section 4.2, the existing US 31 intersections currently have no pedestrian traffic signal indicators or connecting sidewalks. As a result, US 31 currently does not provide for pedestrian and bicycle cross movement, nor would the No-Action Alternative. The No-Action Alternative would incur no impacts to pedestrian and/or bicycle access issues.

Alternatives F1 through F6 would provide an interchange or an over/underpass at every signalized intersection along US 31 except at 103rd Street and Greyhound Pass. In addition, an overpass or interchange would be provided at 131st Street, which currently does not allow for the cross movement of traffic. Pedestrian and bicycle crossing would be provided at these interchanges via sidewalks, shared-use paths, or other means for future pedestrian capabilities as detailed in the Clay Township and Washington Township comprehensive plans. In addition, because these interchanges are grade separated, the potential conflicts between cross movements and US 31 mainline through traffic would be eliminated.

As with any high-speed freeway with interchanges, future bicycle usage of mainline US 31 would be prohibited. This would have a minimal impact on current bicycle traffic on US 31 that is virtually non-existent today. No mainline bicycle travel enhancements would be provided with these alternatives.

Construction of an interchange at 146th Street would impact the shared-use path and sidewalk system along 146th Street. These impacts would be temporary and vary somewhat depending on the interchange alternative selected at 146th Street. Closure may be required during the construction period of the interchange, which could last two years or more. Other temporary impacts related to construction include noise, dust, and construction traffic.

None of the build alternatives would require permanent use from the Monon Greenway (Appendix A, Sheet 5) or the South Union Trail (Appendix A, Sheets 7, 14, and 15); therefore, pedestrian and bicycle access along these trails would be maintained. Temporary closure of both trails would be required during construction activities. For a detailed discussion of Section 4(f) issues concerning these trails, see Chapter 7: Section 4(f) Resources.

A privately owned path is part of the Indiana Mills and Manufacturing, Inc. (IMMI) facility located in the southeastern quadrant of US 31 and 191st Street. This path travels the circumference of the property and appears to be for employee recreation (i.e., connecting two adjoining facilities). It does not appear to be integral to the production operations of the facility. Part of this path would be impacted by the 191st Street interchange.

5.3 Social/Economic Impacts

5.3.1 Relocations

Within the improvement project limits, US 31 bisects suburban, commercial, and rural settings. There are a number of businesses and residential properties that would be displaced by the various alternatives. The No-Action Alternative would incur no relocations. Both build alternatives are identical from I-465 north to 161st street.

Residential Displacements

Displaced Housing Units are illustrated in Appendix A. A housing unit was considered displaced if it was located within the project right-of-way or if reasonable access could not be maintained. The number of displaced housing units for each alternative is included in Table 5.3-1. Mitigation for residential displacements is discussed in Section 6.1.

Table 5.3-1
Displaced Housing Units*

Price Range ($K)	No-Action Alternative	F Alternatives						G Alternatives					
		F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6
0 – 50	0	14	14	14	14	14	14	0	0	0	0	0	0
50 – 100	0	2	2	2	2	2	2	5	5	5	5	5	5
100 – 150	0	26	26	26	26	26	26	20	20	20	20	20	20
150 – 200	0	8	8	11	8	8	11	5	5	8	5	5	8
200 – 250	0	1	1	1	1	1	1	2	2	2	2	2	2
> 250	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	49	49	52	49	49	52	30	30	33	30	30	33

The "No-Action" Alternative will not displace any individuals.

* Valuation of displaced housing units is an estimation based on local housing sales.

Commercial Displacements

A majority of the existing US 31 corridor is developed with a variety of commercial enterprises. The areas of highest commercial density are from 146th Street north to 151st Street and at the intersection of SR 32. Commercial properties include retail, restaurant, service, industrial, and production agriculture. Displaced Commercial Units are illustrated in Appendix A. A commercial unit was considered displaced if it was located within the project right-of-way or if reasonable access could not be maintained. The No-Action Alternative would incur no commercial displacements. Alternatives F1 through F6 would displace approximately three times the number of commercial properties as Alternatives G1 through G6. An interchange at 126th Street (F1-F3 and G1-G3) would also impact the parking area of the retail facility southeast of US 31 and 126th Street. The number of displaced commercial units for each alternative is included in Table 5.3-2. Mitigation for commercial displacements is discussed in Section 6.1.

Table 5.3-2
Displaced Commercial Units

Type	No-Action Alternative	F Alternatives						G Alternatives					
		F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6
Retail	0	26	25	25	26	25	25	9	8	8	9	8	8
Industrial	0	5	5	5	5	5	5	1	1	1	1	1	1
Office	0	12	12	12	12	12	12	4	4	4	4	4	4
Total	**0**	43	42	42	43	42	42	14	13	13	14	13	13

The "No-Action" Alternative will not displace any commercial properties.

5.3.2 Economic

The potential loss of tax revenues for Carmel/Clay Township and Westfield/Washington Township resulting from the project related displacements represent a small percentage of their total tax base (Table 5.3-3). The No-Action Alternative would not impact tax revenue.

Table 5.3-3
Tax Revenue Loss of Residential and Commercial Displacement

Location	Total Tax Revenue†	Alts.	Displaced Properties		Percent of Tax Base	
			Highest*	Lowest**	High	Low
Carmel/Clay Township	$95,051,470.29	F	$ 89,175.54	$ 89,175.54	0.09%	0.09%
		G	$ 89,175.54	$ 89,175.54	0.09%	0.09%
Westfield/ Washington Township	$30,019,508.31	F	$ 341,806.21	$ 314,319.93	1.1%	1.1%
		G	$ 120,467.49	$ 92,981.21	0.4%	0.3%

† - Project receivables (2002 billing for 2001 end-of-year)
* - Alternatives F1, F4, G1, and G4
** - Alternatives F2, F3, F5, F6, G2, G3, G5, and G6

Economic impacts may be experienced by commercial facilities due to changes in access from US 31. Loss of direct access to/from the highway may have adverse impacts on businesses that

are dependent on US 31 traffic. The access loss at Greyhound Pass and 151st Street could adversely impact the Westfield retail district. The hotels located on 103rd Street could be impacted by lack of direct access. Similarly, if no interchange is provided at 126th Street, the retail center along the east side of US 31 could be impacted. However, an upgraded facility would have the capability to support the projected traffic volume. Businesses along the corridor would have exposure to a larger number of people. Therefore, there is a potential for an increase in commercial activity along the corridor.

5.3.3 Land Use/Zoning

The No-Action Alternative would have no impacts on current, future or proposed land use in the area. Alternatives F1 through F6 would directly impact land use adjacent to the existing US 31 corridor. The majority of this impact would take place in the current right-of-way.

Alternatives G1 through G6, once they deviate from the existing alignment north of 156th Street, would directly impact mostly agricultural and undeveloped land. However, a large portion of the vacant parcels to the southeast of Westfield are part of planned developments, which would be impacted by Alternatives G1 through G6. Approximately twice the acreage of agricultural properties would be directly impacted by Alternatives G1 through G6 over the Alternatives F1 through F6. There would be more impacts to residential acreage, forest land, and herbaceous rangeland by Alternatives G1 through G6. As well, Alternatives G1 through G6 would impact four to five times the amount of acreage that has been planned for future development. Conversely, Alternatives F1 through F6 would impact more commercial and industrial acreage. In general, the Alternatives G1 through G6 would have twice the overall land use impacts as Alternatives F1 through F6 (refer to Table 5.1: Potential Impacts of Alternatives).

5.3.4 Neighborhoods/Community Cohesion

Neighborhoods

Due to current zoning and land use planning, only a few residential communities are located adjacent to the existing US 31 corridor. Furthermore, the proposed off-alignment corridor primarily consists of rural housing and agricultural properties. The No-Action Alternatives would incur no impacts to neighborhoods and/or residential communities.

Alternatives F1 through F6 and G1 through G6 South of 156th Street

- *Meridian Suburban* (Appendix A, Sheet 2): This neighborhood would have no displaced homes. Access would no longer be available at 111th Street; however, access would be available at 106th and 116th streets via Spring Mill Road. Twelve of the homes within this neighborhood may experience an increase in the level of traffic noise associated with US 31.
- *Park Place* (Appendix A, Sheets 4A and 4B): This neighborhood would have no displaced homes, no loss of access and no significant increase in traffic noise levels.
- *North Meridian Heights* (Appendix A, Sheets 4A and 4B): This neighborhood would have no displaced homes. Access may no longer be available via 131st Street under

some of the options under the F and G Alternatives (Appendix A, Sheet 4A); however, access would be available at 126th Street and 136th Street. One home within the neighborhood may experience an increase in the level of traffic noise associated with US 31; however, no significant increases in traffic noise levels are anticipated for the remainder of the homes.

- *Bentley Oaks* (Appendix A, Sheets 4A and 4B): This neighborhood would have no displaced homes, no loss of access and no expected significant increase in traffic noise levels.
- *Thistlewood* (Appendix A, Sheet 5): This neighborhood would have no displaced homes, no loss of access and no expected significant increase in traffic noise levels.
- *Hunters Knoll* (Appendix A, Sheet 5): This neighborhood would have no displaced homes within the community; however, there are four displaced homes located on 136th Street adjacent to the neighborhood. The neighborhood would experience no loss of access and no expected significant increase in traffic noise levels.
- *Hunters Creek South* (Appendix A, Sheet 5): This neighborhood would have no displaced homes. The neighborhood would experience no loss of access and no expected significant increase in traffic noise levels.
- *Autumn Lake* (Appendix A, Sheet 5): This neighborhood would have no displaced homes and would experience no loss of access. Two homes may experience an increase in traffic noise levels. The views to the road from the homes may be altered.
- *Circle Drive* (Appendix A, Sheets 6A, 6B and 6C): Circle Drive would no longer be directly accessible via US 31; however, there are two alternate access routes proposed for this neighborhood. Connecting Circle Drive with the proposed extension of Rangeline Road would provide the first alternate access. The second alternate access would connect Circle Drive to Thornberry Drive within Stonehedge Estates (Appendix A, Sheets 6A, 6B and 6C). This neighborhood would have no displaced homes if access were provided via the proposed extension of Rangeline Road (Appendix A, Sheets 6A and 6B). There would be one home displaced with the remaining access option (Appendix A, Sheet 6C). One home may experience an increase in traffic noise levels.
- *Walter's Plaza* (Appendix A, Sheets 6A, 6B and 6C): This neighborhood would no longer have direct access to US 31; however, there are two alternate access routes proposed for this neighborhood. Connecting existing access with a proposed extension of Rangeline Road would provide the first alternate access. The second alternate access would connect Walter's Plaza to Thornberry Drive within Stonehedge Estates (Appendix A, Sheets 6A, 6B and 6C). This neighborhood would have no displaced homes if access were provided via the proposed extension of Rangeline Road (Appendix A, Sheets 6A and 6B). There would be one home displaced with the remaining access option (Appendix A, Sheet 6C). One home may experience an increase in traffic noise levels.
- *Stonehedge Estates* (Appendix A, Sheets 6A, 6B and 6C): There is potentially one displaced home within this community based upon the provided access for Circle

Drive and Walter's Plaza (Appendix A, Sheet 6C). No homes are expected to experience an increase in traffic noise levels associated with the US 31 Corridor.

- *Shadow Lakes* (Appendix A, Sheets 6A, 6B and 6C): There would be no displaced homes, significant change in access or anticipated increase in traffic noise within this neighborhood.

Alternatives F1 through F6 North of 156th Street

- *Buena Vista Drive* (Appendix A, Sheet 7): There would be four displaced homes within this community, all located along the US 31 corridor and associated with the proposed right-of-way. Buena Vista Drive would no longer have direct access to US 31; proposed access would connect Buena Vista Drive with Farr Hills Drive that connects with 161st Street. One home within the community may experience an increase in the traffic noise levels associated with the US 31 corridor.
- *Farr Hills Drive* (Appendix A, Sheet 7): There would be one displaced homes within this community and five additional displaced homes located along 161st Street in close proximity to the community. Access to Farr Hills Drive would be altered to allow for the proposed interchange at 161st Street. Proposed access would occur west of the existing access on 161st Street. Fives homes within the community may experience an increase in the traffic noise levels associated with the US 31 corridor.
- *Westfield neighborhood* (Appendix A, Sheets 8 and 9): No homes within this area would be displaced, access would not be lost or altered significantly and there is no anticipated increase in traffic noise levels.
- *North Glenn Village* (Appendix A, Sheets 8 and 9): Fourteen mobile homes would be displaced along US 31, and 18 residences may experience an increase in the traffic noise levels associated with US 31. This community would no longer have direct access to US 31; however, access would still be available via Tomlinson Road and 191st Street.
- *Justin Morgan Lane and Ethan Allen Drive* (Appendix A, Sheets 10 and 11): No homes within this neighborhood would be displaced. Access would no longer be available from 196th Street; however, access would be available at 191st Street and SR 38. Five homes within the neighborhood may experience increased traffic noise levels associated with US 31

Alternatives G1 through G6 North of 156th Street

- *Carey Commons* (Appendix A, Sheet 16): There would be no displaced homes, changes in access or significant increases in traffic noise levels associated with the proposed construction of the G Alternatives.
- *Willow Creek* (Appendix A, Sheet 16): There would be no displaced homes, changes in access or significant increases in traffic noise levels associated with the proposed construction of the G Alternatives.

- *Grassy Knoll* (Appendix A, Sheet 16): There would be no displaced homes or changes in direct access to this community. One home within the neighborhood may experience an increase in the traffic noise levels associated with the proposed construction.

Community Cohesion

None of the build alternatives would bisect or isolate any communities located along the existing alignment or proposed off-alignment route as a result of the proposed project. Based upon field observations and US Census data for the area, no low income, minority or government-assisted populations would be impacted as a result of the proposed project. No schools or parks associated with the identified neighborhood would be impacted under any of the build alternatives. The No-Action Alternative would incur no impacts to community cohesion.

Alternatives F1 through F6 and G1 through G6 South of 156th Street

- *Meridian Suburban* (Appendix A, Sheet 2): No impact.
- *Park Place* (Appendix A, Sheets 4A and 4B): No impact.
- *North Meridian Heights* (Appendix A, Sheets 4A and 4B): No impact.
- *Bentley Oaks* (Appendix A, Sheets 4A and 4B): No impact.
- *Thistlewood* (Appendix A, Sheet 5): No impact.
- *Hunters Knoll* (Appendix A, Sheet 5): No impact.
- *Hunters Creek South* (Appendix A, Sheet 5): No impact.
- *Autumn Lake* (Appendix A, Sheet 5): No impact.
- *Circle Drive* (Appendix A, Sheets 6A, 6B and 6C): One home may be displaced within this community; however, there is no anticipated significant change in community structure or cohesion, as the community would maintain its current setting.
- *Walter's Plaza* (Appendix A, Sheets 6A, 6B and 6C): One home may be displaced within this community; however, there is no anticipated significant change in community structure or cohesion, as the community would maintain its current setting.
- *Stonehedge Estates* (Appendix A, Sheets 6A, 6B and 6C): One home may be displaced within this community; however, there is no anticipated significant change in community structure or cohesion, as the community would maintain its current setting.
- *Shadow Lakes* (Appendix A, Sheets 6A, 6B and 6C): No impact.

Alternatives F1 through F6 North of 156th Street

- *Buena Vista Drive* (Appendix A, Sheet 7): Four homes would be displaced within this community as a result of the F Alternatives; however, there is no anticipated significant change in community structure or cohesion.
- *Farr Hills Drive* (Appendix A, Sheet 7): One home within this community and five additional homes located nearby would be displaced as a result of the F Alternatives;

however, there is no anticipated significant change in community structure or cohesion.

- *Westfield neighborhood* (Appendix A, Sheets 8 and 9): Several public amenities would be displaced in close proximity to this neighborhood that could impact existing community cohesion. However, schools and the Asa Bales Park and library are still located in close proximity to this neighborhood and all promote community cohesion.
- *North Glenn Village* (Appendix A, Sheets 8 and 9): There would be fourteen displaced mobile homes within the North Glenn Village resulting from changes in the right-of-way of the US 31 corridor. Many of the mobile homes within the neighborhood are rentals. As well, a field survey indicated that approximately fifteen to twenty of the mobile homes were for sale. The North Glenn Village represents a highly transient community and thus a high level of community cohesion is not anticipated.
- *Justin Morgan Lane and Ethan Allen Drive* (Appendix A, Sheets 10 and 11): No impact.

Alternatives G1 through G6 North of 156th Street

- *Carey Commons* (Appendix A, Sheet 16): No impact.
- *Willow Creek* (Appendix A, Sheet 16): No impact.
- *Grassy Knoll* (Appendix A, Sheet 16): No Impact.

5.3.5 Environmental Justice

As per Executive Order 12898 (February 11, 1994), the study area was assessed for compliance with Environmental Justice regulations. Environmental Justice has three fundamental principles:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

According to census data, there are no minority or low-income neighborhoods or communities within the project area (Section 4.3.4). Data from the census reports were verified by field observations. Based on this information, the residential displacements from any of the alternatives do not disproportionately impact any minority or low-income populations.

5.4 Community Facilities and Services

5.4.1 Schools

None of the alternatives would result in direct impacts to any of the schools in the Carmel/Clay School District; however, there would be indirect impacts associated with the current bus routes. The buses for the Carmel/Clay Schools gain access to and/or crossover US 31 most heavily at 116th Street, 126th Street, 131st Street, and 136th Street. Access/ crossover would no longer be available at 103rd Street, 111th Street, and/or Old Meridian Street. Few buses are utilizing these intersections. Routes for these buses would be able to utilize interchanges at 106th Street, 116th Street, or 126th Street. Bus traffic at 131st Street and Rangeline Road may need to be rerouted to interchanges at 126th Street and 146th Street, respectively.

Alternatives F1 through F6 would impact approximately 0.9 acres of a vacant grass lot adjacent to the football field at the Westfield High School, northeast of the intersection of US 31 and SR 32 (Appendix A, Sheet 9). In a memo dated May 28, 2002, Mr. Marty McGaughey (Director of Facilities, Westfield Washington Schools) included a map illustrating public use areas within the Westfield Washington School campus (see Appendix C, Section 4(f)). The aforementioned vacant lot, though part of the school property, is currently unused and is not a publicly owned park, recreation area, wildlife or waterfowl refuge or sites eligible for or included in the National Register of Historic Places. It is therefore not a Section 4(f) property.

Access would also be impacted to the Westfield Washington Township Schools. These schools include Washington Elementary, Westfield Intermediate School, and Westfield High School. The impacts are the result of the proposed interchange at US 31 and SR 32 as well as an over pass at 181st Street. There are no direct impacts to any of the Westfield Washington Township Schools with Alternatives G1 through G6. The Westfield/Washington Township buses rely most heavily on the SR 32/US 31 intersection. Access at this location would be maintained. Access would no longer be available at Greyhound Pass, 151st Street, Westfield Boulevard, 156th Street, 169th Street, David Brown Drive, 196th Street, 202nd Street, and 203rd Street. A crossover would be provided at 181st Street; however, there would be no access to/from US 31. Interchanges would be available within one-half mile of each of these restricted access points.

5.4.2 Churches

The No-Action Alternative would incur no impacts to churches. With both of the build alternatives, the Pilgrim Lutheran Church and the Seventh-Day Adventist Church would need to be relocated (Appendix A, Sheets 1, 7, and 14). With all of the build alternatives, St. Christopher's Episcopal Church on 131st Street would experience some degree of impact (Appendix A, Sheets 4A and 4B). Whether 131st Street is an overpass or an interchange, the proposed grade of 131st Street would need to be adjusted so as to overpass US 31. This grade adjustment of 131st Street would require the entrance at the church to be modified.

5.4.3 Cemeteries

There are no direct impacts to any of the existing cemeteries with any of the alternatives. The build alternatives would impact the proposed expansion area of the Carmel Cemetery (Appendix A, Sheet 5). The cemetery expansion has not been platted.

5.4.4 Libraries

There are no direct impacts to any of the libraries with any of the alternatives.

5.4.5 Fire Stations, Police Stations, and EMS

None of the alternatives would result in direct impacts to any Fire Stations, Police Stations or EMS facilities. However, with the build alternatives, some roads would no longer access US 31 while others would have interchanges or overpasses. Therefore, with the build alternatives, there would be the potential for a change in emergency response times. Some response times would be increased, while others would be reduced.

The build alternatives are anticipated to improve the level of safety for motorists traveling through the US 31 corridor by eliminating signalized traffic control and by better satisfying driver expectation. These improved conditions would likely reduce the volume of emergency response calls directly related to the US 31 corridor. Once the newly constructed US 31 is opened, the reduced traffic congestion would likely improve access and emergency response time.

The response time of the Westfield-Washington Township Fire Station #82, located on 151st Street, east of US 31 (Appendix A, Sheets 6(A-C) and 7), would have the greatest potential to be directly impacted by Alternatives F1 through F6 and G1 through G6. This station services the southern portion of Washington Township. Access from 151st Street to and from US 31 would not be available; however, 151st Street would overpass the highway, allowing access to the west side of US 31. Impacts to emergency response time from Station #82 can be divided into three categories: 1) the area east of US 31; 2) the area west of US 31; and 3) the US 31 corridor.

- *East of US 31*: Alternatives F1 through F6 would impose no adverse impacts to the east side of the US 31 Project. For Alternatives G1 through G6, the area north of the proposed alignment, east of existing US 31, and south of SR 32 may experience increased emergency response time due to the lack of direct access to US 31.
- *West of US 31*: Access to the west side of US 31 would be improved by the project due to the 151st Street overpass. The lack of traffic signals, cross-traffic, and on-coming vehicles from US 31 onto 151st Street may promote a reduction in emergency response time.
- *US 31 Corridor*: Access to US 31 from 151st Street would not be available. Emergency response routes to US 31 for the build alternatives would be 161st Street interchanges via Oak Road to the north or the 146th Street interchange to the south. The variety of interchange options at 146th Street would result in negligible variations in response times.

5.4.6 Hospitals

The No-Action Alternative would incur no impacts to hospitals. St. Vincent Hospital would have some impacts with the build alternatives related to an interchange being proposed at 136th Street (Appendix A, Sheet 5). The impact would result in a relocation of the hospital's detention pond due to the relocation of 136th Street and the exit ramp from northbound US 31. The hospital entrance would be maintained. The access to and from US 31 from St. Vincent Hospital would be improved with the proposed interchange configuration.

There are also some impacts to the Heart Center of Indiana property. The proposed interchange located at 106th Street would require additional right-of-way to be purchased for an entrance ramp and collector distributor system along the eastern property line of the building which fronts the right-of-way of existing US 31 (Appendix A, Sheet 2).

5.4.7 Public Parks and Recreation Areas

The No-Action Alternative would incur no impacts to public parks or recreational areas. None of the proposed build alternatives would require the permanent or temporary use of any property identified as a Section 4(f) resource pursuant to 23 CFR 771.135 (a), Section 4(f) of the US Department of Transportation Act of 1966 (49 USC 303) and Section 138 of the Federal-Aid Highway Act of 1968 (i.e., public park, recreation area, wildlife or waterfowl refuge or sites eligible for or included in the National Register of Historic Places). Alternatives F1 through F6, however, would require relocating the proposed entrance to the future MacGregor Park from US 31 to SR 38 (Appendix A, Sheet 13). The access from SR 38 would be provided to the boundary of the park and would not require any temporary or permanent use from the park property. As a result, there would be no Section 4(f) use.

None of the build alternatives would require permanent use from the Monon Greenway (Appendix A, Sheet 5) or the South Union Trail (Appendix A, Sheets 7, 14, and 15); therefore, recreation use of these trails would be maintained. Temporary closure of both trails would be required during construction activities. For a detailed discussion of Section 4(f) issues concerning these trails, see Chapter 7: Section 4(f) Resources.

None of the build alternatives would require the permanent or temporary use from, or convert the use of, any property identified as a Section 6(f) property pursuant to Section 6(f)(3) of the Land and Water Conservation Fund (LWCF) Act of 1965 (16 USC 460). Hamilton County Parks and Recreation received LWCF funding for the nature center at Cool Creek Park; however, since funding was used for the nature center and not for the purchase of land, Section 6(f) does not apply to Cool Creek. There are no other LWCF funded parks within the study area; therefore, no Section 6(f) resources will be impacted.

5.4.8 Major Utilities

The No-Action Alternative would incur no impacts to major utilities. All of the build alternatives would require the relocation of both public and private above and belowground utilities. The high pressure natural gas lines located south of 156th Street would likely not need to be relocated as all the alternatives at this location are at/or just above existing grade.

However, due to construction easements, the associated metering station will need to be relocated (Appendix A, Sheets 7 and 14). The build alternatives cross 14 major utilities (Figure 5.1): two natural gas, six crude oil, three sewer mains, two water mains, and one high tension power. Alternatives G1 through G6 off-alignment section crosses two of these (one crude oil and one natural gas) utilities at different locations.

5.5 Farmland

Farmland soils are classified by the Natural Resources Conservation Service (NRCS) under the jurisdiction of the Farmland Protection Policy Act of 1981 (FPPA) into two categories for determining affect: Prime and Unique Farmland, and Statewide and Local Important Farmland. According to the Indiana NRCS, there are no soils classified as Statewide or Local Important Soils within Hamilton County. Prime farmland soils are prominent throughout the project area. As defined by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), prime farmland is "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, and is also available for these uses (i.e., land that could be cropland, pastureland, rangeland, forest land or other land, but not urban built-up land or water)."

The No-Action Alternative would incur no impacts to prime farmland. The F Alternatives follow the existing alignment of US 31 and, as a result, have the fewest impacts to prime farmland (95 to 98 acres) of the build alternatives. Alternatives G1 through G6, north of 156th Street, follow a new route which transverses through the country east of Westfield and rejoins the existing alignment at US 38. Due to this off-alignment segment, the Alternatives G1 through G6 have the greatest impacts to prime farmland (277 to 280 acres). Alternatives F1 through F6 use the existing alignment and, therefore, do not bisect parcels. Alternatives G1 through G6 bisect agricultural parcels along the east side of Westfield. The agricultural parcels bisected by Alternatives G1 through G6 south of SR 32 would retain access from the surrounding rural roads (Carey Road, Oak Road, 171st Street, and 169th Street) (Appendix A, Sheets 15 and 16). These parcels are all part of the Oak Manor PUD and are slated for development. The agricultural parcels north of SR 32 are zoned for residential development; however, there have been no plans submitted for development of these areas. Alternatives G1 through G6 would bisect 16 agricultural parcels north of SR 32 (Appendix A, Sheets 16-20). Of these, four bisected parcel sections would be "land-locked" and would require access provisions. The remaining eight would result in extended routing by the farmer, across the alignment, to gain access to the separated parcels.

As is required by the Farmland Protection Policy Act, Form AD-1006 has been completed (Figures 5.5-1 through 5.5-3). Because this project received a total point value of less than 160 points, coordination with the NRCS is not necessary and the build alternatives would receive no further consideration for farmland protection. No other alternatives other than those already discussed in this document would be considered without re-evaluation of potential impacts upon farmland.

Figure 5.5-1 AD-Form 1006

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date of Land Evaluation Request	21-Feb-03
Name of Project	US 31 Improvement Project	Federal Agency Involved	Federal Highway Administration
Proposed Land Use	Highway	County and State	Hamilton County, Indiana
PART II *(To be completed by NRCS)*		Date Request Received by NRCS	

Does the site contain prime, unique, statewaide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*		Yes ☐	No ☐	Acres Irrigated	Average Farm Size
Major Crops(s)	Farmable Land In Govt. Jurisdiction Acres: %			Amount Of Farmland As Defined in FPPA Acres: %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System			Date Land Evaluation Returned By Nrcs	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating F1	F2	F3	F4
A. Total Acres To Be Converted Directly	102.8	102.8	102.8	102.3
B. Total Acres To Be Converted Indirectly	N/A	N/A	N/A	N/A
C. Total Acres In Site	102.8	102.8	102.8	102.3
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART IV *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	100	100	100	100

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use	15	7	7	7	7
2. Perimeter In Nonurban Use	10	5	5	5	5
3. Percent Of Site Being Farmed	20	4	4	4	4
4. Protection Provided By State And Local Government	20	0	0	0	0
5. Distance From Urban Builtup Area	0	0	0	0	0
6. Distance To Urban Support Services	0	0	0	0	0
7. Size Of Present Farm Unit Compared To Average	10	0	0	0	0
8. Creation Of Nonfarmable Farmland	25	0	0	0	0
9. Availability Of Farm Support Services	5	5	5	5	5
10. On-Farm Investments	20	15	15	15	15
11. Effects Of Conversion On Farm Support Services	25	0	0	0	0
12. Compatibility With Existing Agricultural Use	10	0	0	0	0
TOTAL SITE ASSESSMENT POINTS	160	36	36	36	36
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	100	100	100	100
Total Site Assessment *(From Part VI above or a local site assessment)*	160	36	36	36	36
TOTAL POINTS *(Total of above 2 lines)*	260	136	136	136	136

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

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Figure 5.5-2 Form AD-1006

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date of Land Evaluation Request: 21-Feb-03
Name of Project: US 31 Improvement Project	Federal Agency Involved: Federal Highway Administration
Proposed Land Use: Highway	County and State: Hamilton County, Indiana
PART II *(To be completed by NRCS)*	Date Request Received by NRCS:

Does the site contain prime, unique, statewaide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☐	No ☐	Acres Irrigated	Average Farm Size
Major Crops(s)	Farmable Land In Govt. Jurisdiction Acres: %		Amount Of Farmland As Defined in FPPA Acres: %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System		Date Land Evaluation Returned By Nrcs	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating F5	F6	G1	G2
A. Total Acres To Be Converted Directly	102.3	102.3	276.8	276.8
B. Total Acres To Be Converted Indirectly	N/A	N/A	N/A	N/A
C. Total Acres In Site	102.3	102.3	276.8	276.8
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART IV *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	100	100	100	100

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use	15	7	7	12	12
2. Perimeter In Nonurban Use	10	5	5	7	7
3. Percent Of Site Being Farmed	20	4	4	10	10
4. Protection Provided By State And Local Government	20	0	0	0	0
5. Distance From Urban Builtup Area	0	0	0	0	0
6. Distance To Urban Support Services	0	0	0	0	0
7. Size Of Present Farm Unit Compared To Average	10	0	0	0	0
8. Creation Of Nonfarmable Farmland	25	0	0	0	0
9. Availability Of Farm Support Services	5	5	5	5	5
10. On-Farm Investments	20	15	15	15	15
11. Effects Of Conversion On Farm Support Services	25	0	0	0	0
12. Compatibility With Existing Agricultural Use	10	0	0	0	0
TOTAL SITE ASSESSMENT POINTS	160	36	36	49	49
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	100	100	100	100
Total Site Assessment *(From Part VI above or a local site assessment)*	160	36	36	49	49
TOTAL POINTS *(Total of above 2 lines)*	260	136	136	149	149

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side) **Form AD-1006 (10-83)**

This form was electronically producd by National Production Services Staff

Figure 5.5-3 Form AD-1006

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date of Land Evaluation Request: 21-Feb-03
Name of Project: US 31 Improvement Project	Federal Agency Involved: Federal Highway Administration
Proposed Land Use: Highway	County and State: Hamilton County, Indiana
PART II *(To be completed by NRCS)*	Date Request Received by NRCS:

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☐	No ☐	Acres Irrigated	Average Farm Size
Major Crops(s)	Farmable Land In Govt. Jurisdiction Acres: %		Amount Of Farmland As Defined in FPPA Acres: %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System		Date Land Evaluation Returned By Nrcs	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating G3	G4	G5	G6
A. Total Acres To Be Converted Directly	276.8	276.3	276.3	276.3
B. Total Acres To Be Converted Indirectly	N/A	N/A	N/A	N/A
C. Total Acres In Site	276.8	276.3	276.3	276.3
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART IV *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	100	100	100	100

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use	15	12	12	12	12
2. Perimeter In Nonurban Use	10	7	7	7	7
3. Percent Of Site Being Farmed	20	10	10	10	10
4. Protection Provided By State And Local Government	20	0	0	0	0
5. Distance From Urban Builtup Area	0	0	0	0	0
6. Distance To Urban Support Services	0	0	0	0	0
7. Size Of Present Farm Unit Compared To Average	10	0	0	0	0
8. Creation Of Nonfarmable Farmland	25	0	0	0	0
9. Availability Of Farm Support Services	5	5	5	5	5
10. On-Farm Investments	20	15	15	15	15
11. Effects Of Conversion On Farm Support Services	25	0	0	0	0
12. Compatibility With Existing Agricultural Use	10	0	0	0	0
TOTAL SITE ASSESSMENT POINTS	160	49	49	49	49
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	100	100	100	100
Total Site Assessment *(From Part VI above or a local site assessment)*	160	49	49	49	49
TOTAL POINTS *(Total of above 2 lines)*	260	149	149	149	149

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side) **Form AD-1006 (10-83)**

This form was electronically producd by National Production Services Staff

5.6 Historic and Archaeological Resources

The No-Action Alternative would incur no impacts to historic and/or archaeological resources.

5.6.1 Historic Properties

There are two historic properties and one historic district that are potentially eligible for the National Register of Historic Places within the Area of Potential Effects (APE) of the project. There are two potentially eligible historic properties that would be impacted by Alternatives F1 through F6, the Hunt House (Appendix A, Sheets 10 and 11) and Lindley Farm (Appendix A, Sheets 12 and 13). The Determinations of Effects for these properties are as follows:

***Hunt House*, c. 1870, U. S. 31 (No address available)**

Architectural Type: Gothic Revival
National Register Eligibility: Yes **Criteria:** C, Architecture

This house was rated outstanding in the survey because it was one of only a few high style Gothic Revival residences in Hamilton County. While a great deal of overgrowth has occluded the house from view, it retains its integrity, and is individually eligible for the National Register. The home was mentioned in *Indiana Houses* (Peat, W.). The original land purchase appears to have occurred in 1835 when 80 acres was purchased by Conrad Starns. This was probably speculative and there is no information regarding any construction or use of the site at this early date. By 1860, 29 acres of this property, in Section 25, Township 19 North, Range 3 East had been sold to Calvin Hunt by John & Mary Beals for $1,400. This would indicate that some improvements were present on the lot. However, the traditional association with this property indicates that the present house was constructed by Calvin Hunt (Peat, W., *Indiana Houses).*

The Hunts, Calvin and Mary Ann owned the property until 1881 when 21 acres were sold to George Stalker for $6,500. Thus, the construction date of the house, c. 1870 is within the period of time when the property was owned by the Hunts, and probably represents a realistic construction date, within 10 years. The integrity of the property is intact from the 1860 purchase through 1970, when it was owned by H. G. Richards, even though 8 acres appears to have been removed from the property sometime after 1860. Such small acreage discrepancies are not unusual. In addition, 2.5 acres were removed. However, this does not affect the integrity of the property.

Calvin Hunt was a prominent business man of Westfield during his life. It is likely that the "farm" was never a large agricultural operation and that only stock, kitchen gardens, etc. were used at the site. The property continues to be eligible for the National Register under Criterion C, for the unique quality of its architecture. While the property has always been associated with most of the land it presently occupies, it does not appear that the agricultural integrity of this land was key to its significance.

The existing access for the Hunt House to US 31 would be eliminated with Alternatives F1 through F6. New access to the parcel would be provided from 191st Street (Appendix A, Sheets 10 and 11). Compensation for the access would be provided by INDOT. No permanent or temporary use would be acquired from the Hunt House.

Alternatives F1 through F6
Direct Effect: No permanent or temporary use would be required from the historic boundary of this property, which was determined in consultation with the DHPA and which includes the house and its immediate surrounds.

Visual Effect: The property's current access is from US 31 to the east. The present right-of-way is approximately one hundred feet from the property. A new access road as well as a retaining wall (located between the property and the highway) would be required. In addition, there is a possibility of elevation of the highway within the view shed of the property. All of these indicate that there would be an adverse visual effect (Figure 5.6-1). Sight lines to the west should not be affected. **Adverse Effect.**

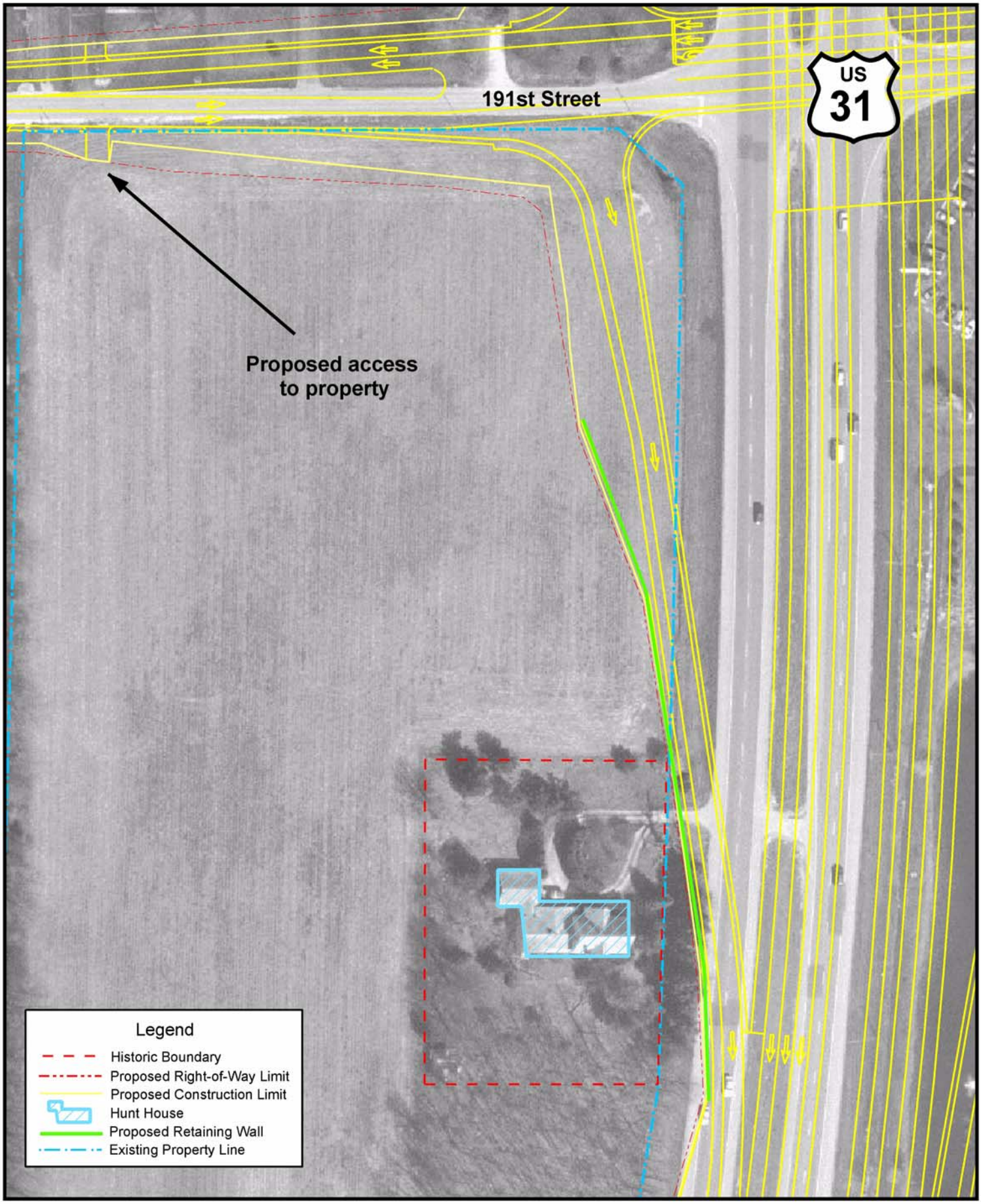
Auditory Effect: There is an increase in the projected noise level (69.9 dBA for No Action and 70.8 dBA for Alternatives F1 through F6). However, the existing level (68.3 dBA) already exceeds the acceptable level for residences (Section 4.8). **Adverse Effect.**

Alternatives G1 through G6
Because Alternatives G1 through G6 would not result in any roadway improvements along the existing US 31 where the Hunt House is located, there would be no adverse effects. **No Effect.**

***T.J. Lindley Farm*, c. 1886, 20820 US 31 North**
Architectural Type: Italianate
National Register Eligibility: Yes **Criteria:** C, Architecture and A, Agriculture

This farm is outstanding in many respects, including the large, stone foundation barn, with board and batten siding which probably dates to c. 1870. In addition, the pasture area connected with this barn appears to have been nearly unaltered since its earliest time. The house is an outstanding example of the late Italianate style, with excellent workmanship and materials.

The original, quarter section, was probably purchased by Levi Cook (80 acres) in 1835 and by William Anthony (80 acres) in 1833. By July of 1838, Aaron Lindley had acquired Mr. Anthony's 80 acres and one year later (1839) he had combined it with the additional 80 acres owned by Levi Cook. Plat maps indicated that this 160-acre area, the quarter section, was owned by A. Lindley's estate in 1866.



US31 IMPROVEMENT PROJECT

Scale: 1" = 100'

Aerial Source: Hamilton County, Indiana

Figure 5.6-1
Historic Properties
Hunt House: F Alternatives
Draft Environmental Impact Statement
Hamilton County, Indiana

Aaron Lindley was the father of a large family, including Thomas J. Lindley, who built the present 1886 Italianate house (although the barn is probably of an earlier date). It is not known when the property was actually transferred to Mr. Lindley. His father died in 1856, but the property was listed in his estate on the plat maps until at least 1866. By 1880, it was in the name of T. J. Lindley and remained largely so until his death in 1973, when it appears to have transferred to his daughter Helen Bray.

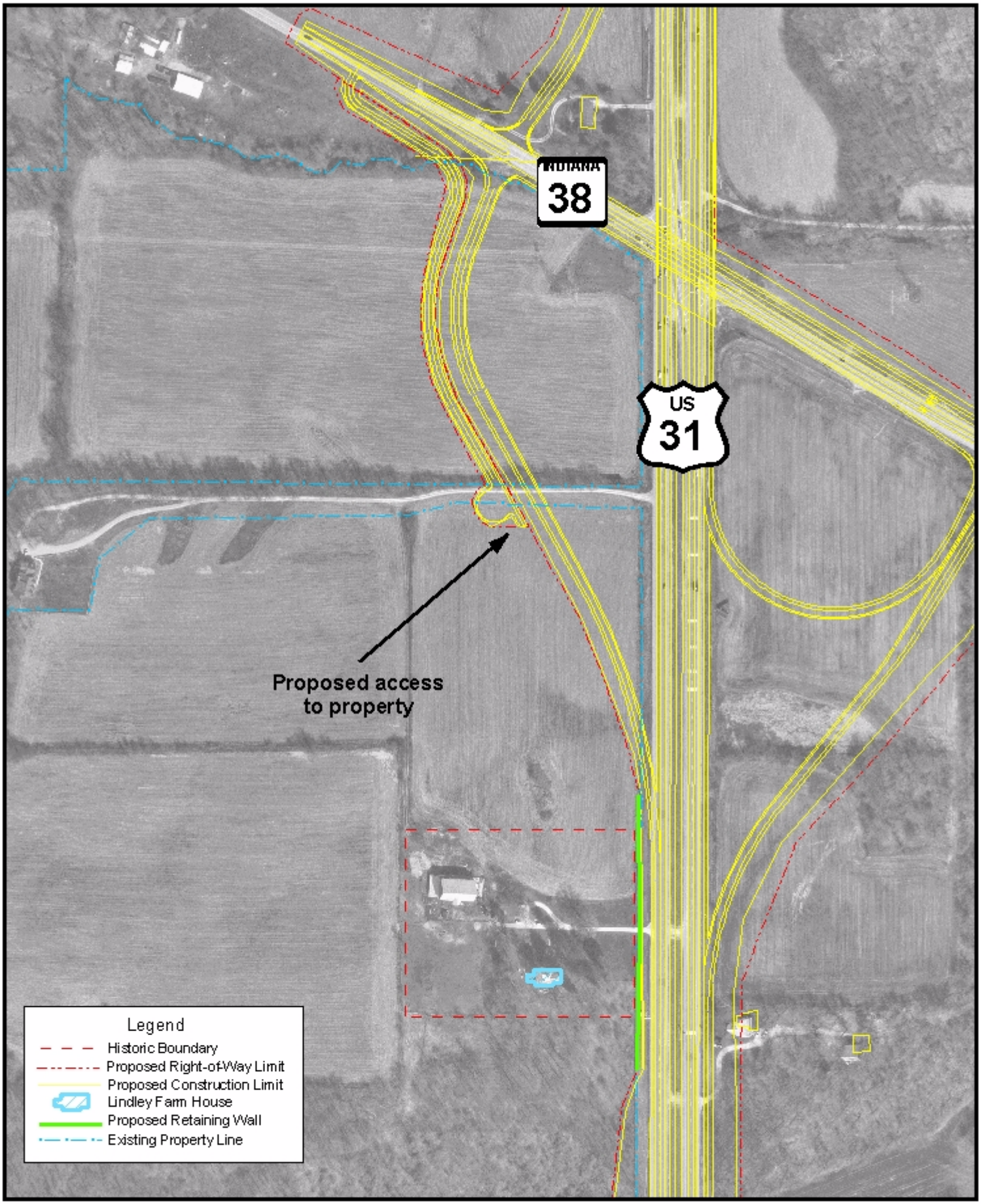
During his life, Mr. Lindley served in the Civil War, was a teacher, the Sheriff in Hamilton County and later, a State Representative. He maintained his activities on the farm in which he was born in 1843 and grew up. Most of the original property remained in the Bray family through 1999, essentially comprising the original quarter section of Section 13; however, only the immediate farmstead is eligible.

The existing access for Lindley Farm to US 31 would be eliminated with Alternatives F1 through F6. New access to the parcel would be provided from SR 38 (Appendix A, Sheets 12 and 13). The access to Lindley Farm would cross multiple properties; therefore, the initial portion of the access would be a new Hamilton County road, ending with a cul-de-sac, providing access to the parent parcel. Compensation for the access would be provided by INDOT. No permanent or temporary use would be required from Lindley Farm.

Direct Effect: With the historic boundary as presently drawn in consultation with the SHPO, there would be no permanent or temporary use of the historic property for any of the build alternatives.

Visual Effect: Alternatives F1 through F6 would add a retaining wall and an access road. Access to the property would change from the present lane at US 31 to access from the north at SR 38. The change in access would change the approach to the farm from the front (west) to the side (north), de-emphasizing the façade; thereby altering the visual setting and orientation (Figure 5.6-2). **Adverse Effect.** Alternatives G1 through G6 would not change access and thus would not change the entry; however the proposed alignment would be visible from the back of the house, changing the viewshed from agricultural (passive/private) to freeway (active/public), thus changing the visual setting (Figure 5.6-3). **Adverse Effect.**

Auditory Effect: Alternatives F1 through F6 (69.9 dBA) would increase the existing noise level (64.1 dBA) above the acceptable level for such properties. ***Adverse Effect.*** Alternatives G1 through G6 (60.9 dBA) would have a noise level less than the existing US 31. ***No Adverse Effect.*** The No-Action Alternative would increase the noise level to 65.6 dBA which is below the acceptable level for such properties. ***No Adverse Effect.***

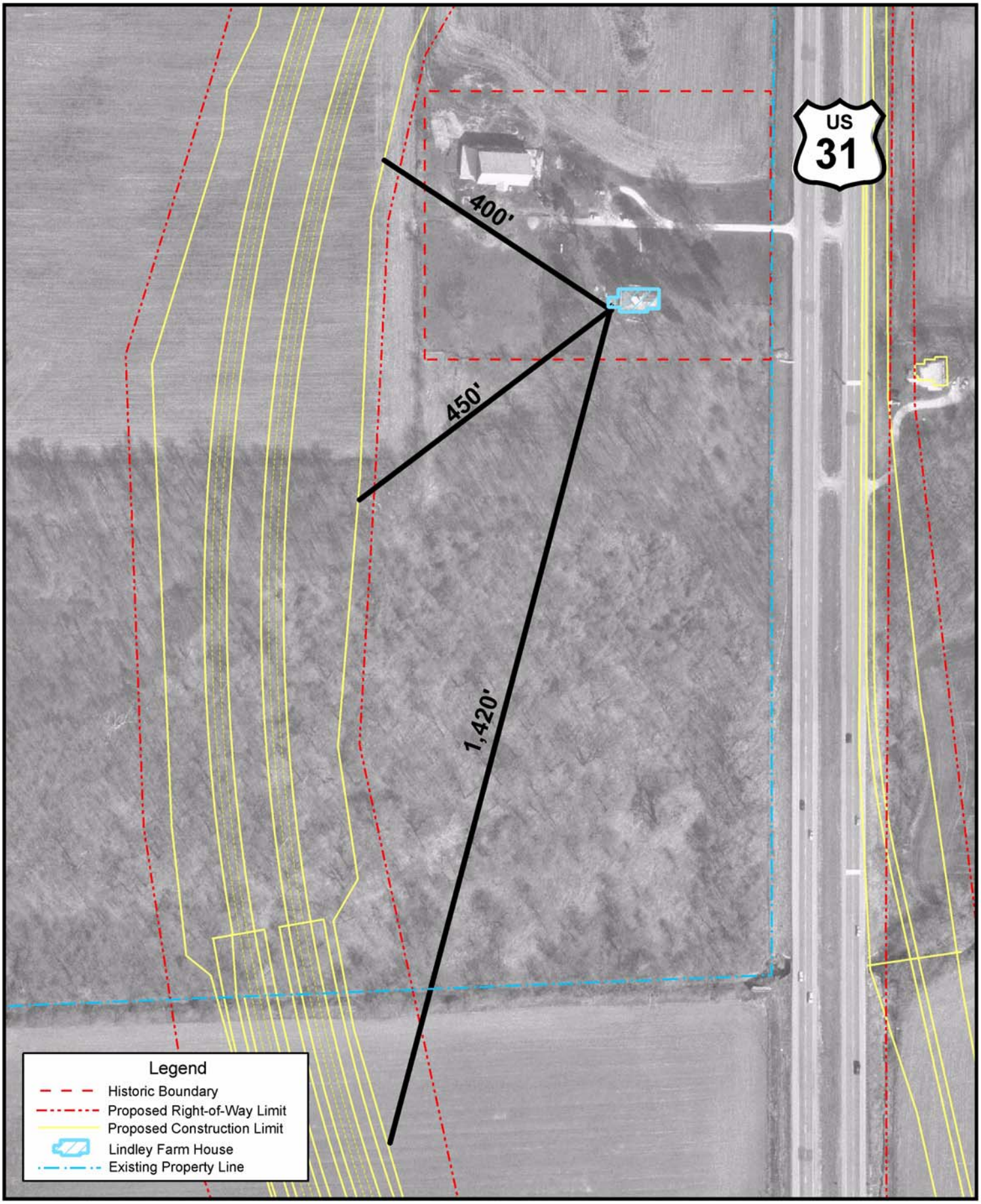


US31 IMPROVEMENT PROJECT

Scale: 1" = 300'

Aerial Source: Hamilton County, Indiana

Figure 5.6-2
Historic Properties
Lindley Farm: F Alternatives
Draft Environmental Impact Statement
Hamilton County, Indiana



US31 IMPROVEMENT PROJECT

Scale: 1" = 200'

Aerial Source: Hamilton County, Indiana

Figure 5.6-3
Historic Properties
Lindley Farm: G Alternatives
Draft Environmental Impact Statement
Hamilton County, Indiana

***Westfield Historic District* (Proposed), SR 32 and Union Street**

There are several important historic buildings, including an excellent brick and limestone bank block and a Carnegie Library, which could form the nucleus of a historic district in Westfield (Figure 5.6-4).

Beginning at the corner of South Union Street (the east side only) and Jersey Street, two non-contributing modern buildings bring the district to Main Street. North of Main, the district includes four multilevel buildings to complete it to the first alley north of Main Street. On the west side, north of Main Street, a new (non-contributing) park, and two other buildings bring it to the alley. West of the park, on Main Street, the Carnegie Library is the western boundary.

National Register Eligibility: Yes **Criteria:** C, Architecture and A, Commerce

Direct Effect: There is no direct physical effect on the district from any of the build (US 31) alternatives.

Visual Effect: The construction limit of Alternatives F1 through F6 is approximately 700' from the edge of the district, along SR 32. However, the existing highway is not visible from the district at present. Distances to the right-of-way of Alternatives G1 through G6 are such that there is no visibility. **No Effect.**

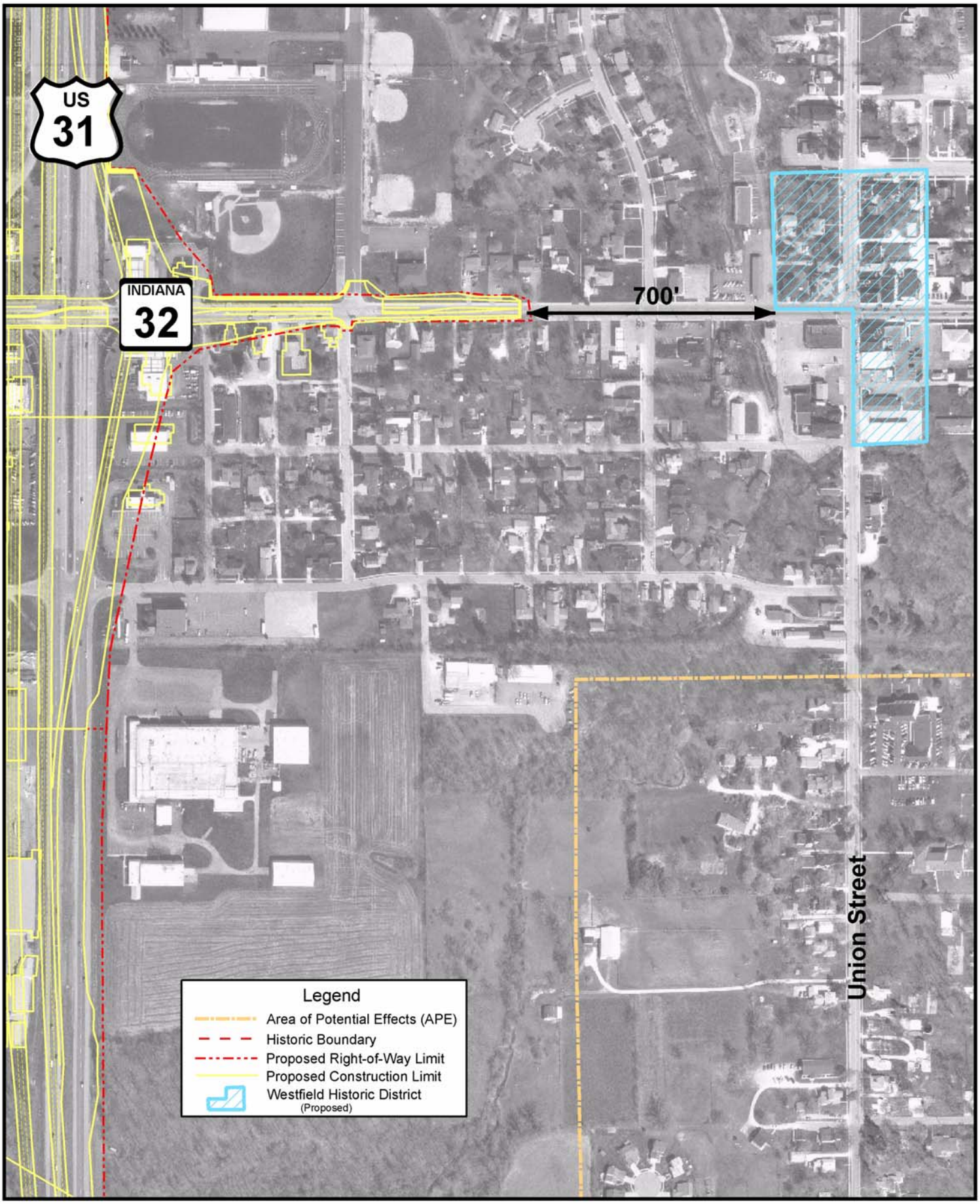
Auditory Effect: All of the build alternatives are over 1,000 feet from the Westfield Historic District. Therefore, traffic noise from the corridor mainline from any of the build alternatives would not impact the area. **No Effect**

The Historic Landmarks Foundation of Indiana has expressed concerns about both the Hunt House and the Lindley Farm; in particular they are opposed to the alteration or demolition of the Hunt House. As there will be no alteration to the characteristics of the Hunt House that make it historically significant, and no demolition to the property would take place, these concerns have already been addressed. As well, there will be no alteration or demolition to the Lindley Farm or any other property referred to by the Historic Landmarks Foundation of Indiana (Appendix C, Section 106 Correspondence).

5.6.2 Archaeological Resources

Archaeological resources were analyzed via available documentation and coordination with SHPO. No archaeological surveys were performed as part of the DEIS. Phase Ia archaeological surveys will be performed upon the determination of a preferred alternative and included in the Final Environmental Impact Statement.

The No-Action Alternative would incur no impacts to archaeological resources. Based on soil type, relief, landscape position, and known prehistory activity, there are between 42 and 44 acres of land that have a high probability of containing archaeological resources within Alternatives F1 through F6, and between 76 and 77 acres within Alternatives G1 through G6 (Figure 4.6-1). Additionally, based a review of archaeological survey records maintained by SHPO, there is the potential to impact 7 to 8 known archaeological sites by Alternatives F1 through F6 and 4 to 5 by Alternatives G1 through G6. Most of these are lithic scatter sites, revealing chert flakes and broken points.



US31 IMPROVEMENT PROJECT

Scale: 1" = 350'

Aerial Source: Hamilton County, Indiana

Figure 5.6-4
Historic Properties
Westfield Historic District (Proposed)
Draft Environmental Impact Statement
Hamilton County, Indiana

None of the sites are considered eligible for the National Register of Historic Places (NHRP). At the request of SHPO, the locations of archaeological sites are not identified.

In the event that any culturally significant finds such as funerary or human remains should be inadvertently discovered, the Delaware Tribe of Oklahoma requested that construction be halted immediately and that the tribe be contacted as soon as possible. In addition the tribe requests that the Indiana SHPO be contacted to verify whether a cultural resources survey has been conducted for the area; if a survey has been conducted the Delaware Tribe of Oklahoma requests a copy be forwarded to their Environmental Program Director. If a survey has not been completed the tribe requests that a survey is conducted prior to construction activities.

Additionally, the Miami Nation requests that if remains, which fall under the Native American Graves Protection and Repatriation Act (NAGPRA), are discovered during construction activities immediate consultation with the Indiana Historical Society, IDNR and all related parties take place.

5.7 Air Quality

The No-Action Alternative could potentially result in a decrease in air quality due to a projected increase in traffic congestion.

5.7.1 Conformity

No portion of this project is within a designated nonattainment area for any of the air pollutants for which the USEPA has established standards. Accordingly, a conformity determination under 40 CFR Part 93 ("Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act") is not required.

5.7.2 Carbon Monoxide Microscale Analysis

The carbon monoxide microscale dispersion analysis conducted is consistent with the latest mobile source emissions factors issued by the USEPA known as MOBILE5B and Conformity Regulations dated November 11, 1993 (40 CFR Part 93). The CAL3QHC model, Version 2.0 (USEPA, 1992), is the intersection model used for this analysis. Carbon monoxide (CO) was selected as the air pollutant indicator to be evaluated for this project because automobiles and trucks are major sources of CO emissions. Another pollutant, ozone, is not a concern at the microscale level because it is a regional pollutant. In addition, ozone, unlike CO, is reactive in that it results from a chemical interaction between volatile organic compounds (VOCs) and oxides of nitrogen (NO_x). Climate dynamics play a key role in the concentration and dispersion of ozone.

Carbon monoxide concentrations were calculated for "worst case" receptors for the years 2000 (existing), 2010 (first year of operation), and 2025 (design year). A "worst case" receptor is typically defined as a location nearest the roadway segment with the highest traffic volumes and lowest average speeds on the project route and nearest to a high volume crossroad where an individual is likely to be found for the time extent in the NAAQS. For this project edge of right-of-way receptors were identified at the US 31 proposed interchanges located at 116th and 146th Streets.